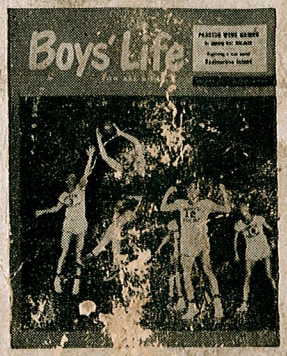
Be Prepared for your Merit Badges!



For the skills you need to get ahead in Scouting, look to the pages of BOYS' LIFE.

Month after month you can count on BOYS' LIFE for helpful articles on your Merit Badge interests:

on camping and cooking;
on boating and exploration;
on hobbies and Scoutcraft;

and dozens of other activities and vocations. Yes, you'll get more out of Scouting by reading BOYS' LIFE.

BE PREPARED

MERIT BADGE SERIES

BOY SCOUTS OF AMERICA

STEPS IN EARNING A MERIT BADGE

When you have decided on a subject that interests you, first read the merit badge pamphlet and become familiar with the requirements.

Your Scoutmaster or Explorer Advisor will give you an application to fill out and tell you how to get in touch with the merit badge counselor who will help you.

Telephone or call on the merit badge counselor. Ask him when you may have a talk with him. Be sure to keep your appointment AND BE ON TIME. Perhaps you will have several meetings with the counselor. To help you in your preparation, he may suggest things for you to do, other people to see, or an interesting book to read. He may teach you some simple skills that will start you off on the right foot.

Now you are ready to go to work in earnest. Lay out a plan of what you will do to finish each required project. Refer to your merit badge pamphlet frequently. Get help from other Scouts who have earned the merit badge, Dad, other members of your family, your teachers, or your neighbors.

When you are sure that you have learned and done all the things that the requirements call for, go back to your counselor. He will test your knowledge and skill and examine your exhibits if any are required. He may suggest that you spend a little more time on one or two of the requirements. At last, though, if you stick with it, you will meet all of the requirements satisfactorily. The counselor will then approve your application.

Turn your application in to your Scoutmaster or Advisor. He will forward it to the local council, and you will receive the merit badge later at a court of honor.

ARCHERY

Keep -

Has more information than later revision.

No. 3381—25 Cents Printed in U.S.A. 15M656

REQUIREMENTS

1. Name and explain the archery safety rules.

2. (a) Shoot with bow and arrows a Junior American round on a standard 48" target, and make a score of 250:

   30 arrows at 50 yards
   30 arrows at 40 yards
   30 arrows at 30 yards

   O R

   (b) Shoot with bow and arrows a Chicago round on a standard 16" target, and make a score of 250:

   30 arrows at 17 yards 2 feet — 50 yards at 48" target
   30 arrows at 13 yards 1 foot — 40 yards at 48" target
   30 arrows at 10 yards — 30 yards at 48" target

   O R

   (c) Shoot with bow and arrows an official field archery round and make a score of 50.

3. (a) Give the definition of the following:

   American round
   Junior American round
   The field rounds
   Clout shoot

   (b) Give the shooting rules used in target tournament; explain how arrows are scored —OR—give the shooting rules used in field archery tournaments; explain how arrows are scored.

4. (a) Explain proper care and how to store: the bow; bowstring; arrows.

   (b) Make a bowstring, whip the string, and adjust the bowstring with a bowman's knot.

   (c) Explain the following terms: cast; weight of bow; fistmele; methods of aiming; spine; difference between target, field and hunting arrows.

   (d) Discuss the history, romance and development of archery with your Counselor.

CONTENTS

1. HISTORY OF ARCHERY

IT IS INTERESTING TO FIND in the article on Archery in the Encyclopedia Brittanica, that authorities place the bow and arrow as third among the world's great factors for advancement of civilization, only speech and the use of fire ahead of it.

We do not know when the bow was discovered. Oddly enough, Australia seems to have skipped archery, or archery skipped Australia. Otherwise the use of the bow and arrow, or at least some form of the simple "strung stick," seems to have been world-wide, although the archery implements themselves varied greatly among different peoples.

In any case it is easy to see what a tremendous effect the discovery of these weapons had on the life of primitive man. Up to then he was more or less at the mercy of savage wild beasts, who were far stronger and better armed by nature than himself, in a face-to-face encounter to the death. With some form of the "strung stick" he could hide and shoot safely from a distance. He could also provide himself with flesh foods and fish, for fish, were not only speared, but shot by early man. Through the use of the bow, leather, fur, horn, sinew and ivory were also within man's range as he

saw fit to develop the various possibilities to make life more comfortable and safe.

The Israelites, as we can gather from the Bible, were great archers. So were the Egyptians, Assyrians, Babylonians, Persians, Greeks, Chinese and Japanese. Japan, in particular was the land of the rising arrow as well as the rising sun. The bow and arrow gave that country its ancestral early empire, and it is to the records of early Japanese scribes that modern historians go for information about archery dating back to the stone age.

The Numidians and Ethiopians used wooden bows, but most Eastern nations used the delicately constructed and highly effective composite, or Turkish bow, which the Moslems themselves perfected to an extraordinary degree both in beauty and power of flight.

During the period known as the middle ages, many battles were won because of the skill of the long bowmen rather than the power of armored knights, even when those armored knights were supported by great hoardes of foot soldiers using cross bows. It was with a long bow that William Tell was supposed to have shot the apple from his son's head. Robin Hood and his famous band of merry men have brought romance with bows and arrows into song, legend, and history.

Queen Elizabeth (the first) of England hunted deer in the royal forests and made archery a fashionable court sport. Her Yeomen of the Guard was a crack archery corps.

For centuries the badge of loyal service to king and country was the freeman's yew bow which he was required by royal edict to own and be expert with. Old English history is interwoven with the story of the long bow, and this is true of many other countries, even our own to some extent.

In our own country, a skillfully hewn flint arrowhead, such as some of you like to collect, takes us back to the time when the red man roved the plains and forest, bringing down his game and his foes. The Indian was no doubt a skilled marksman, though modern bowyers do not give him the same high rating as other primitive races in the actual manufacture of his implements, partly because certain kinds

of wood were scarce, and partly because he did not know the best procedure in the seasoning of wood. Perhaps, too, the Indian's great skill as a stalker of game made it unnecessary for him to be skillful in making his weapons. Nevertheless the increasingly popular short, flatlimbed bow as we know it today is an adaptation of the early Indian bow and has obvious advantages over the more cumbrous long bow.

By the time of the American Revolution, firearms had displaced the bow, though it was still used by "mercenaries" in some old countries, and by primitive people, partly, probably because the bow was cheaper, and in many parts of the world the power gun was still unknown. It is interesting to note that even at the time of the Revolution, Benjamin Franklin is said to have reminded the Continental Army that bows and arrows were "good weapons not wisely cast aside."

Until some time after the Civil War, archery as a sport was hardly known in this country. Then a wave of enthusiasm started rolling from coast to coast, largely through the efforts of the Thompson brothers, Will and Maurice, of whom more later. It is only since 1918, however, that archery has really come into its own with us. American *Toxophiles* (lovers and students of archery) are among the best in the world. American scientists and practical "bowyers," (makers of bows) have contributed immeasurably to the perfection of both bows and arrows along scientific lines. American target and flight shooters are second to none. Archery has come into its own with us as a sport.

2. YOUR ARCHERY EQUIPMENT

REQUIREMENT TWO asks you to make your own bow, arrow, and string. First perhaps it will be better to buy an outfit, if you can manage it. This will give you a chance to start right in to practice and learn the necessary "form" which every good target shooter must acquire for himself. You will also know better what weaknesses to avoid in the outfit you make, and you will be able to make a bow and arrows that exactly suit your needs. Such ready-made equipment need not be expensive, particularly for the beginner. Time enough for that when you get to be an expert. Nevertheless know what you are buying, and what to look for in a good bow and set of arrows. Here are some hints.

Selecting Your Bow

First of all, to get the best results your bow must be adapted to your own size and strength. A bow with too strong a "pull" may overstrain your muscles and make you form bad shooting habits. Generally speaking the bow should be just about your own height. A chart that will help you to find the proper length of bow and arrows to fit your height and reach will be found in Ben Pearsons article on "How to Make a Flat Bow" in this book. Test out the bow yourself in the shop, both braced and unbraced. Ask the salesman to do the same while you watch. By all means

Hoogerhyde and Thompson, in their valuable booklet, "Archery Aims," give this excellent advice on testing your bow: If you do not know how long an arrow to use, find out by selecting a light weight six-foot bow. Draw it and have dealer measure your reach. Stand at right angles to an imaginary target. Turn head (not body) so that your right eye (left eye if you are lefthanded) will look squarely at the imaginary target. Grasp bow handle just under arrow plate with left hand. Extend left arm fully in direction of target. With first three fingers of right hand on string (directly opposite arrow plate) draw it back until it touches chin at a point directly under right eye. Do not draw past this point. The distance from this point on chin to 1/4" beyond back of how is the length of arrow you can handle. Do not strain to get measurement. (Never strain in archery. It's fatal.) Your accuracy of aim in target shooting will depend on your ease of handling your equipment.

take along an expert if possible to give you advice. He may be better able to check on all the qualities necessary for a good bow than you are.

Bow Material

Within the last few years glass bows have appeared on the market. Some of these are made of Fiberglas bonded to a wooden core while others are solid Fiberglas as used to make many fishing rods. In tests these bows have proven a greater life expectancy than either wood or metal. They are not affected by temperature or moisture and are not harmed by remaining strung for considerable periods of time. The paragraphs following this one are about wooden bows.

You can choose a bow of traditional pattern with off center grip or one of modern design which is capable of long service and, according to some experts, superior in drawing force and general efficiency. While bow ends permanently set away from string (reflexed) improve action, they should

be avoided by the beginner as they are more subject to strain. The same caution applies to bows too greatly narrowed or grooved at arrow passage.

See that the grain of the wood is reasonably straight, free from blemish or "curl." Test out for straightness with bow unbraced. The limbs should be in perfect alignment and not twisting away from line of string. They should also balance. The whole of each limb should bend freely from just outside the handle limits. Test bow by drawing it something less than arrow length to see that it does not "twist" in the hand. The handle portion should show definite rigidity but the rest of the bow should arch smoothly, in a true arc (or parabola).

Selecting Your Arrows

Tommy, Maurice Thompson's Indian guide, declared, "Any stick do for bow—good arrow—ugh! heap work!" This is something of an exaggeration. You do need a good bow, but a good well matched set of arrows is equally, if not more important. Well matched arrows (arrows that are alike in weight, balance and featuring) depend on you and the bow for their accurate flight. Poorly constructed, and poorly matched arrows, will not fly alike. Therefore the arrows as well as the bow should be carefully chosen not only with regard to proper length but other important considerations.

Arrow Material

Port Orford cedar or Norwegian pine is generally a safe bet for arrow wood. Birch may be a little stronger but it is apt to be crooked and irregular in flight. When we hear the expression "straight as an arrow," we may think that refers to the arrow's course to its mark. It does not. The course of an arrow is always on an arc—the higher the flight, the larger the arc. It is never straight. But the arrow itself must be, if it is to be reliable.

Arrows are feathertipped to catch the wind. In buying arrows you will want to look carefully not only at the wood but also at the feathers. A poorly fletched arrow may fly as fast as any, but it will wobble in its course and cannot

be counted on for accurate performance. Feathers should be of the same size and stiffness and always from the same side of the bird (usually the feathers are from a turkey in these days).

As in the case of the bow, the purpose for which the arrow is to be used will also affect your choice of arrow. Flight, target, and hunting arrows are different in construction and characteristics.

Bowstrings

The Turks, Persians and other eastern nations used silk for their bowstrings. Horse hair and gut were used by the Greeks, both rather undependable materials. Irish or Italian flax and synthetics are now used for bowstrings. Methods of making the bowstring will be described later. Strength, resilience, smoothness, uniform texture and compactness are qualities to look for in a good bowstring.

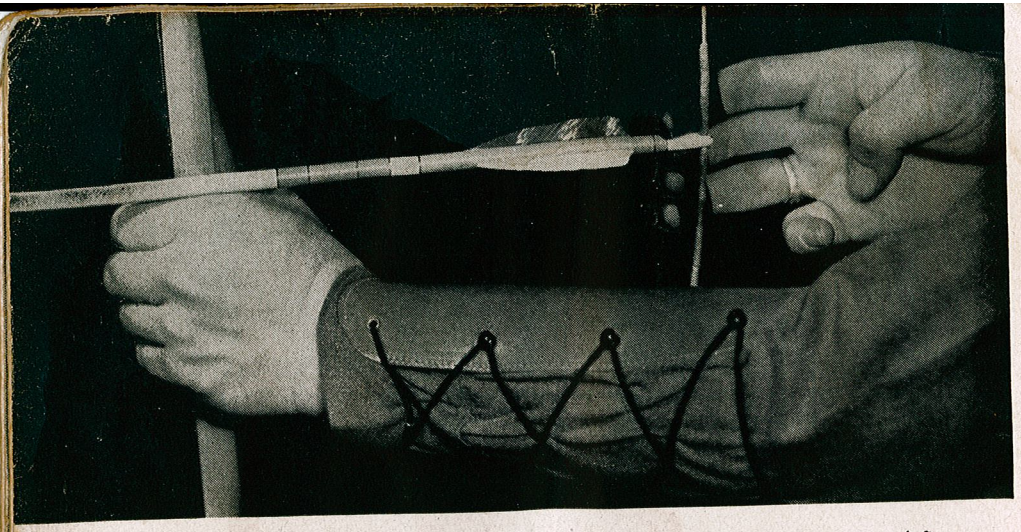
The Arm Guard (Brace)

Don't let anyone tell you that you don't need an arm guard for shooting. You do. Robin Hood of old, used one, and so does every modern archer. Only a novice would risk getting along without one. Such a guard not only protects the bow-arm but also provides the string with a smooth surface to strike, does not decrease the speed, and reduces the danger of deflection. It is easy to make your own arm guard* or you can buy one reasonably. There are several good types on the market, made of rawhide or other stiff leather, sometimes lined with felt to follow the line of the arm.

Finger Protection

The first three fingers, which are the delicate instruments of archery, must also be protected. There are various gloves on the market which serve this purpose. Such gloves should be of some soft leather like cordovan. Experienced archers

* See Chapter 10.



Proper protection for arm and fingers.

however use mostly simple tabs or tips, fitting snugly but not too tight.

The Quiver

The quiver is a device for carrying arrows. Suggestions for handmade quivers will be given later.* The quiver should be worn on the right side and should be of such a type that it will support arrows at right angles to the body. Feathers may otherwise be mussed and arrow itself may be affected by body heat. A belt pouch is not absolutely essential, but desirable. Many a field and target archer, however, carries his arrows in his hip pocket—feathers up, of course.

The Target

The regulation target consists of a straw base (boss) or other backing, and a face of canvas, sail cloth or similar durable material. On this face are painted the bull's-eye, known as the "Gold," and four concentric circles, respectively. From gold out, they are red, blue, black and white. A green "petticoat" forms the outside rim. Usually a few inches outside this scoring space is allowed for convenient

* See Chapter 10.

fastening to the boss, as will be described later. Target is hung so that centre of gold is exactly four feet above ground. The target is supported on a tripod firmly anchored so it will not slip or be upset by wind.

CARE OF EQUIPMENT

Your Bow

Keep bow unbraced when not in use. Preferably covered with canvas or waterproofed bag to fit. In unbracing never use pressure to straighten. It may weaken grain. Let the bow straighten itself. Store in a place of normal temperature, away from radiators or other heating devices. Never leave bow on ground at any time. Or anywhere else where it is likely to be stepped upon or marred or be affected by dampness. Never dry by artificial heat. This will also keep finish intact as well as add to appearance. Don't draw your bow to the full without an arrow in it. In breaking in a new bow, don't draw to the full until you have worked it a little to give it suppleness. This applies also to any bow that has been out of use for some time.

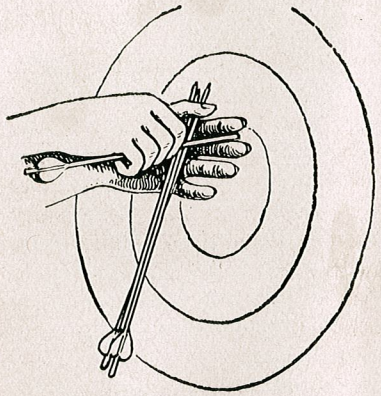
Never borrow a bow. No two archers shoot exactly alike. A bow is a peculiarly personal piece of property. Even a skilled hand may unfit it for the owner's use. It is as sensitive as a violin.

Arrows

Arrows also need good care. Look over carefully for evidence of any damage after shooting. If an arrow is splintered, discard it. A splintery arrow is not only less useful for shooting, but may cause serious injury to the archer. If it is roughened, smooth with sandpaper, and repolish with oil or wax. Keep a wax rag handy in your belt, and in any case a soft cloth for cleaning after use. If feathers are crushed they can usually be restored by twirling in the steam from a tea kettle spout. The heat and moisture from the boiling water will make barbs stand erect, dress web smooth, and restore natural oil. If a feather end has been loosened, glue into position again. If rough, trim with a sharp knife

or razor blade. If heads are dulled, repoint with fine file and clean with steel wool.

When not in use, store your arrows in a place of moderate temperature. Many archers keep them in a specially constructed box* with a frame which keeps arrows from touching each other and straight. Others prefer to hang arrows by their heads on a wall rack. This is convenient also for drying out.



Be careful not to injure arrow in removing from target. Take hold of it close to target face, push against face with other hand. Pull arrow gently.

String

Keep string well waxed. Never snap it more than an inch or two without an arrow in position. If you have a target keep it well covered when not in use, protected from weather by heavy waterproof canvas or rubberized material.

*NOTE: The American Archer, a quarterly, describes such a box in its Hobby Page (Vol. I, No. 1).

3. SHOOTING TECHNIQUE

PROVIDED NOW with your bow and set of arrows and the few necessary accessories you are ready to start shooting. Maybe using a bow and arrow is not new stuff to you. A little learning we know is a dangerous thing, so unless you learned to shoot under the guidance of a skilled marksman, you may find you have some bad shooting habits to correct. It is easier in some ways to learn how *not* to shoot than to learn how to shoot. Form plays an important part in archery. Most of the difference between a good and a poor archery marksman is in the correctness of his technique. You must achieve good form if you want to excel in archery. In the following pages we are giving you, boiled down to simplest terms, the advice of various experts. But good advice will not take the place of practice. Long, patient practice, and every bit of it is fun—shooting fun. Learning by doing applies here as it does to so many Scout activities and hobbies. There is no lazy road to good archery.

SHOOTING THE BOW AND ARROW

By Pat Chambers

National Archery Champion, 1938-1939

ARCHERY IS NO SIMPLE GAME to be learned rapidly. However, the Scout who once becomes proficient in the use of this ancient weapon may look for-

ward to years of sport—engaging in tournaments, roving through the woods, or hunting. To be successful at any of these, however, the archer must have a good knowledge of the sport and must shoot correctly.

Although it is possible to shoot a good score occasionally even with poor form, consistently good scores require correct shooting technique and much careful practice. The reward of watching a well-sped arrow bury itself in the center of the target is something well worth working for.

Equipment

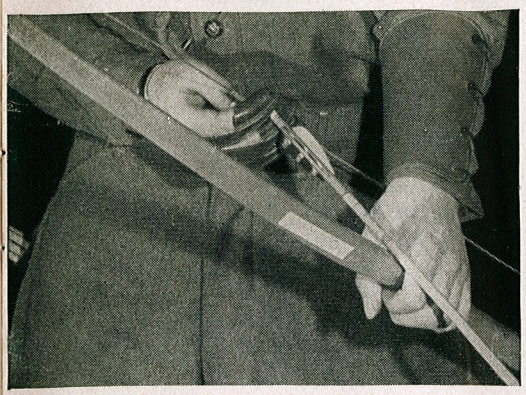
Some form of finger protection is worn on the hand that draws the string, either a shooting glove or a finger tab. The arm guard is worn on the arm that holds the bow. The string coming down on the unprotected arm can cause a very painful abrasion. Traditionally six arrows are shot and scored. This is called an end. A group of ends form a round. You should keep at least one extra arrow and an extra bowstring on hand in case of breakage.

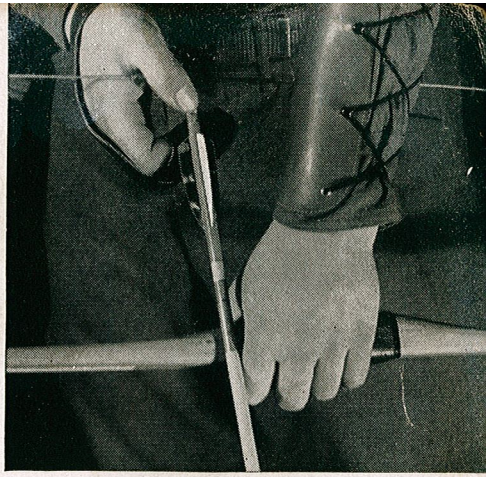
BRACING THE BOW

To brace the bow, grasp the handle of the bow in the left hand with the flat back of the bow toward you. Place the lower end of the bow against the arch of the inside of the left foot. Place the heel of the right hand on the back of the bow, near the top, with the fingers touching the loop. Bend the bow by pulling with the left hand and pushing down with the right, until the thumb and forefinger of the right hand are able to slide the loop into the nock. To unbrace the bow, take the same position and bend the bow until the string may be picked from the nock with the thumb and forefinger.

HOW TO SHOOT

In shooting the bow, stand with left side facing the target and bow in left hand. (Left-handed archers, of course, reverse these directions.) Holding bow horizontally, grasp the arrow at the nock with thumb and forefinger of right hand, and place across arrow plate of the bow. Then turn arrow until the cock feather is perpendicular to the bow, and arrow is fitted to the bowstring.

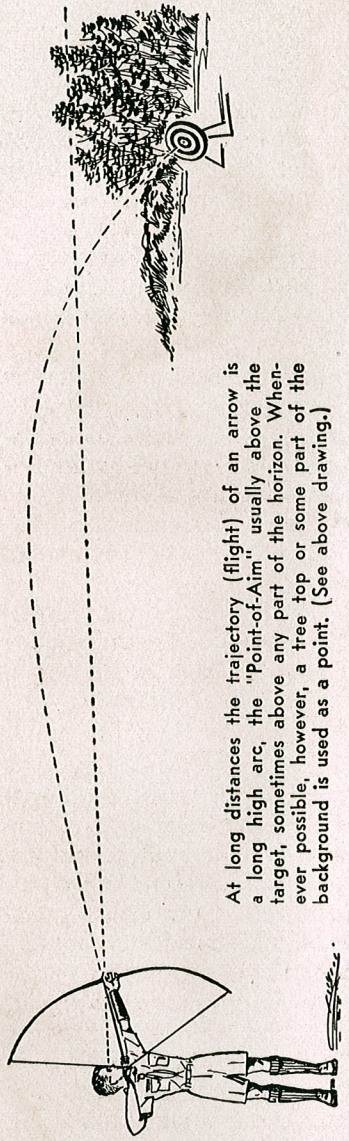




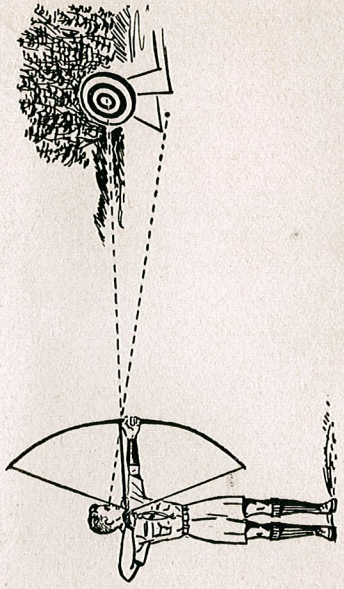
With right palm up, hook forefinger under bowstring to right of nock, middle finger and ring finger to left of nock. Bowstring should cut through lower portion of the first joint about one-half inch from the tips of the fingers.

Then swing the bow to a vertical position ready for drawing, and draw gently about two inches to tense the string on all three fingers. Bow rests in the hand against the base of thumb and is held in place by tension of the draw. The fingers curl loosely around the bow, which is never held tightly. To get the left arm and hand in position for drawing, raise left arm with a very slight bend of the elbow. Pull bowstring back slowly. At this point of the draw, it is important that the hand and forearm act only as a connection between the bowstring and the shoulder muscles, which actually do the pulling. This enables fingers and hand to remain relaxed for the proper release.

Continue to draw the arrow until the V-shape of the right hand (between the thumb and forefinger) fits snugly against right jawbone. In this position, the tip of the forefinger should be near the point of the chin. In full draw position, it is desirable to anchor the V-shape of the right hand solidly against the right jawbone. The three drawing fingers of the right hand are then relaxed, allowing the bowstring to slip smoothly from them, carrying the arrow toward the target. In order not to deflect the flight of the arrow, hold the bow arm in the extended position until the arrow has left the bow. This eliminates all undue movement before the arrow is released, allowing it to pursue a straight flight.



At long distances the trajectory (flight) of an arrow is a long high arc, the "Point-of-Aim" usually above the target, sometimes above any part of the horizon. Whenever possible, however, a tree top or some part of the background is used as a point. (See above drawing.)



When shooting at short distances the trajectory is practically flat. The "Point-of-Aim" is usually between the archer and target as shown at right. When the "Point-of-Aim" is on the GROUND in front of the target, a peg, ball, or just a leaf may be used to mark the point.

Aiming

There are two methods of aiming the bow in popular use: point of aim, and use of a bow sight.

In using the point-of-aim method of shooting, look over the point of the arrow with the right eye, and line it up with the point of aim and the center of the target. When the alignment has been made perfectly, the arrow is released. Trial and error will give the location of the point of aim at the various distances. A record may be kept of the point of aim for the different distances with a piece of wood or dowel about six inches long. A notch is cut in the top end of this stick. Standing in shooting position after the point of aim has been established, the gauge is held in the hand at arm's length, and the notch is lined up with the center of the target. Without moving the arm, a sight is made along the stick in line with the point of aim. This position is marked with a notch or pencil mark and carefully checked. This gauge should be marked for all the various distances. The bow, with its end resting on the ground may be used to steady the hand holding the gauge.

If a bow sight is used, the adjustment for the various distances should be marked. If the arrows strike low on the target, the sight is lowered on the bow, if high on the target, the sight is raised.

Care of Equipment

Never allow a bow to be drawn farther than the length of the arrow designed to be shot in it and never draw a bow without an arrow on the string. To do so will impair the cast of the bow, if not break it. In cold weather, do not pull the bow to full-draw position until it has been drawn gradually. Sudden strain on cold wood may cause it to splinter. Always replace worn strings before there is danger of breaking. Many bows are broken because of a broken string.

Keep your arrows straight. To straighten, heat shafts over a hot plate—never over open flame, and after the shaft is heated through, hold in left hand and straighten over the base of the left thumb. Mussed feathers may usually be brought back to shape by steaming slightly.